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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,416	04/03/2001	Ralph S. Shoberg	RST-007-B	2653

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EXAMINER

COMPTON, ERIC B

ART UNIT	PAPER NUMBER
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3726

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/825,416

Applicant(s)SHOBERG, RALPH S. **Examiner**

Eric B. Compton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 18 March 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 18 and 21 rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,106,176 to Rice et al.

Rice et al disclose a method for auditing tension in a threaded fastener comprising:

- a) providing a installed threaded fastener (e.g., a bolt);
- b) applying a torque to the threaded fastener with a wrench (1) until a torque is reached such that the fastener rotated;
- c) measuring the torque values applied to the fastener with a torque transducer (6) and the angle the fastener rotates with an angle transducer (5) to determine a breakaway point (B) and determining the rate of change of torque per unit of rotation (module 14);
- d) creating a plot of the measure torque values versus the measured angle values (see Figure 1).

- e) extending a tangent from the torque versus angle plot at a point (B), or predetermined torque (see col 7, lines 11-13) where the fastener was rotating to the angle axis and defining the point (G) at which the tangent crosses the angle axis to be zero degrees (see Figure 1, curve II);
- f) scaling the angle axis from the zero degree point based on the actual rotation of the fastener and measuring the angle of rotation from the zero degree point to the angle corresponding to the torque necessary to rotate the fastener ($\Delta\Phi$); and
- g) comparing the measured angle against a predetermined angle (module 26).

Regarding claim 18, Rice et al disclose "The preset amount of total rotation is determined for ***each fastener joint combination*** based on either joint experience or the theoretical or experimental determination ... " Col 6., lines 9-12 (emphasis added). Likewise, they disclose that for a given fastener, the same sort of relationship between tension and rotation is observed. Col. 6, lines 30+ Thus, they inherently disclose that the system is used with a plurality of fasteners. The method above would be repeated with each given fastener. Furthermore, it is inherent that an operator is keeping track of fasteners being torqued to make sure that the properly tensioned, by comparing them either individually or with a predetermined value.

Regarding claim 21, the predetermined angle is a design parameter determined based upon joint experiences (see col 6, lines 9-16).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 18-21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al.

Rice et al disclose the invention cited above. However, they do not expressly disclose tensioning a plurality of threaded fasteners (3 or more) or specify the amount of rotation applied.

Regarding claim 18, Rice et al disclose "The preset amount of total rotation is determined for ***each fastener joint combination*** based on either joint experience or the theoretical or experimental determination ... " Col 6., lines 9-12 (emphasis added). Likewise, they disclose that for a given fastener, the same sort of relationship between tension and rotation is observed. Col. 6, lines 30+ Thus, they inherently disclose that the system is used with a plurality of fasteners. The method above would be repeated with each given fastener. Furthermore, it is inherent that an operator is keeping track of fasteners being torqued to make sure that the properly tensioned, by comparing them either individually or with a predetermined value. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have compared the audit values of a group of fasteners in an assembly using the method of

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Rice et al, in order to make sure all the fasteners in an assembly are all properly torqued.

Regarding claim 19, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied torque for a rotation from 1-15 degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 20, Official Notice is taken that assemblies comprising a plurality (3 or more) of threaded fasteners are known; for example in mounting an engine in an automobile. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have audited the applied torque to a plurality of fasteners in assembly using the method of Rice et al, in light of the Official Notice taken, in order to ensure that all the threaded fasteners in an assembly are properly tightened.

Regarding claim 21, the predetermined angle is a design parameter determined based upon joint experiences (see col 6, lines 9-16).

5. Claims 18-21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al in view of U.S. Patent 4,179, 786 to Eshghy.

Rice et al disclose the invention cited above. However, they do not expressly disclose tensioning a plurality of threaded fasteners or specify the amount of rotation applied.

Eshghy discloses a method of tensioning controlling of threaded fasteners similar to both Rice et al and Applicant. Furthermore, the reference notes that the output can

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be a printed readout of certain values such as the tension for the operator to view. Cols. 55-56, lines 63-20. Data for a number of fasteners can be printed out as shown in Table II, see Col. 57-58. The data can be used to compare the values for each joint to identify and reject low-tension fasteners, ensure proper tightening, as well as provide for quality control procedures. Col. 57, lines 15-23.

Regarding claim 18, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have audited the applied torque to a plurality of fasteners in assembly using the method of Rice et al and compared audit values, in light of the teachings of Eshghy, in order to quality control of the joints.

Regarding claim 19, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied torque for a rotation from 1-15 degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 20, Official Notice is taken that assemblies comprising a plurality (3 or more) of threaded fasteners are known; for example in mounting an engine in an automobile. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have audited the applied torque to a plurality of fasteners in assembly using the method of Rice et al, in light of the Official Notice taken, in order to ensure that all the threaded fasteners in an assembly are properly tightened.

Regarding claim 21, the predetermined angle is a design parameter determined based upon joint experiences (see Rice et al, col 6, lines 9-16).

Response to Arguments

6. Applicant's arguments filed March 18, 2003, have been considered but are not found persuasive.

Applicant's arguments with respect to Rice et al are not convincing. Rice et al inherently provide for the invention to be used for a plurality of fasteners, as indicated above. In the alternative, one of ordinary skill in the art at the time the invention was made would have appreciated using the method of Rice et al to audit and compare the loads in a plurality of fasteners nonetheless, based on the teachings of Rice et al and Eshghy.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (703) 305-0240. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory M. Vidovich can be reached on (703) 308-1513. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

ebc
April 23, 2003


GREGORY VIDOVIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700